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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/824,367  | 04/15/2004  | Taiga Iinuma         | 119452              | 6633             |
| 25944   | 7590        | 12/14/2006           |                     | EXAMINER         |
| OLIFF & BERRIDGE, PLC<br>P.O. BOX 19928<br>ALEXANDRIA, VA 22320 |             |                      | MARTIN, LAURA E     |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2853                |                  |

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/824,367             | IINUMA, TAIGA       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Laura E. Martin        | 2853                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 April 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-30 is/are pending in the application.  
 4a) Of the above claim(s) 1-7,13,15,16,19,21,23,25,27, and 29 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 8-12,14,17,18,20,22,24,26,28 and 30 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 15 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/15/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Specification***

The abstract of the disclosure is objected to because the word "comprises" should not be used in the specification. Correction is required. See MPEP § 608.01(b).

***Election/Restrictions***

Applicant's election without traverse of claims 8-12, 14, 17-18, 20, 22, 24, 26, 28, and 30 in the reply filed on 5/09/06 is acknowledged.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

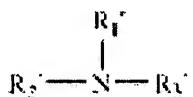
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 10, 14, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Yui et al. (US 5462590) in view of Yano et al. (US 6048309).

**Yui et al discloses the following claim limitations:**

As per claim 8, Yui et al. teaches an ink jet ink composition comprising at least water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):

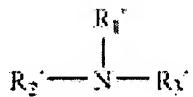
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wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO.sub.2M and --SO.sub.3M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

As per claim 10, Yui et al. teaches an ink-jet composition wherein the amine compound is selected from the group consisting of N,N-bis(hydroxyalkyl)glycine derivatives and N,N-bis(hydroxyalkyl)-2-aminoethanesulfonic acid derivatives (column 4, lines 33-47).

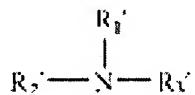
As per claim 14, Yui et al. teaches an ink jet recording method comprising forming an image by adhering an ink jet composition to a recording medium (column 1, lines 11-18), wherein the ink jet composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1',

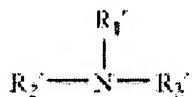
R<sub>sub.2'</sub> and R<sub>sub.3'</sub> in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO<sub>sub.2M</sub> and --SO<sub>sub.3M</sub> in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

As per claim 20, Yui et al. teaches an ink set comprising at least two inks (column 1, lines 11-18) comprising at least water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R<sub>sub.1'</sub>, R<sub>sub.2'</sub> and R<sub>sub.3'</sub> in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO<sub>sub.2M</sub> and --SO<sub>sub.3M</sub> in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

As per claim 22, Yui et al. teaches an ink jet recording method comprising forming an image by using an ink set containing at least two ink (column 1, lines 11-18) by adhering an ink to a recording medium, wherein the ink comprises at least water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO.sub.2M and --SO.sub.3M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

**Yui et al. does not disclose the following claim limitations:**

As per claims 9, 10, 14, 20, and 22: the content of the amine compound is in a range of 5-30% by mass.

**Yano et al. discloses the following claim limitations:**

As per claims 9, 10, 14, 20, and 22: the content of the amine compound is in a range of 5-30% by mass (column 66, lines 52-63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink, method, and apparatus taught by Yui et al. with the disclosure of Yano et al. in order to restrain ink degredation.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (US 5462590) and Yano et al. (US 6048309), and further in view of Pavlin (US 5777023).

Yui et al. as modified teaches an ink jet ink set; however it does not disclose a melting point or decomposition point of the amine compound is 50°C or more.

As per claim 11, Pavlin teaches a melting point or decomposition point of the amine compound is 50°C or more (column 21, lines 22-38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink jet ink set of Yui et al. as modified with the disclosure of Pavlin in order to create a higher quality and more consistent ink set.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (US 5462590) and Yano et al. (US 6048309), and further in view of Oki et al. (US 20020050226).

Yui et al. as modified teaches an ink jet ink composition; however, it does not disclose a surface tension of the ink composition is 40 mN/m or less.

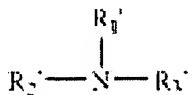
Oki et al. teaches a surface tension of the ink composition is 40 mN/m or less [0021].

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It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink jet ink composition of Yui et al. as modified with the disclosure of Oki et al. in order to create a higher quality and more consistent ink.

Claims 17, 18, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (US 5462590) and Yano et al. (US 6048309), and further in view of in view of Koitabashi (US 6471348).

As per claim 17, Yui et al. teaches an ink jet recording apparatus comprising at least a recording head including a liquid ejection surface having a nozzle for ejecting a liquid wherein during printing an image is formed onto a surface of the recording medium from the liquid ejection surface (column 1, lines 11-18 and column 1, line 59-column 2, line 1), an ink composition comprising at least water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --

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CO<sub>2</sub>M and --SO<sub>3</sub>M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

Yui et al. as modified does not teach a recording medium transfer section for transferring a recording medium in one direction while the recording medium faces the liquid ejection surface and a shortest distance between the recording medium and the liquid ejection surface is constantly maintained, the recording head moving in a direction perpendicular to the transfer direction of the recording medium.

Koitabashi teaches a recording medium transfer section for transferring a recording medium in one direction while the recording medium faces the liquid ejection surface and a shortest distance between the recording medium and the liquid ejection surface is constantly maintained, the recording head moving in a direction perpendicular to the transfer direction of the recording medium (column 11, lines 10-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink jet recording apparatus of Yui et al. as modified with the disclosure of Koitabashi because it is well known in the art as a mechanism for efficient printing.

As per claim 18, Yui et al. and Koitabashi disclose an ink jet recording apparatus except for the shortest distance between the liquid ejection surface and the recording medium is in a range from 1.0 mm to 2.0 mm and a largest length of the liquid ejection surface in the recording medium transfer direction is 2.54 cm or more. It would have

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been obvious to one having ordinary skill in the art at the time the invention was made to maintain a range of values for the distance between the liquid ejection surface and recording medium and the recording medium transfer direction, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As per claim 24, Yui et al. teaches an ink jet recording apparatus comprising at least a recording head including a liquid ejection surface having two nozzles for ejecting a liquid wherein during printing an image is formed onto a surface of the recording medium from the liquid ejection surface (column 1, lines 11-18 and column 1, line 59-column 2, line 1), an ink composition comprising at least two inks, which each comprise water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --

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CO<sub>2</sub>M and --SO<sub>3</sub>M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

Yui et al. as modified does not teach a recording medium transfer section for transferring a recording medium in one direction while the recording medium faces the liquid ejection surface and a shortest distance between the recording medium and the liquid ejection surface is constantly maintained, the recording head moving in a direction perpendicular to the transfer direction of the recording medium.

Koitabashi teaches a recording medium transfer section for transferring a recording medium in one direction while the recording medium faces the liquid ejection surface and a shortest distance between the recording medium and the liquid ejection surface is constantly maintained, the recording head moving in a direction perpendicular to the transfer direction of the recording medium (column 11, lines 10-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink jet recording apparatus of Yui et al. with the disclosure of Koitabashi because it is well known in the art as a mechanism for efficient printing.

Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (US 5462590) and Yano et al. (US 6048309), and further in view of in view of Kawamura et al. (US 6387506).

As per claims 26 and 28, Yui et al. teaches an ink comprising water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32).

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wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO.sub.2M and --SO.sub.3M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

Yui et al. as modified does not teach a colorless ink jet treatment liquid used together with an ink jet composition.

Kawamura et al. teaches a colorless ink jet treatment liquid used together with an ink jet composition comprising at least water and a water-soluble organic solvent (column 11, line 44-column 12, line 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ink jet recording method and colorless treatment liquid of Yui et al. as modified with the disclosure of Kawamura et al. in order to create higher quality images that are less prone to smudging.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (US 5462590) and Yano et al. (US 6048309), and further in view of in view of Koitabashi (US 6471348) and Kawamura et al. (US 6387506).

Yui et al. teaches an ink jet recording apparatus comprising at least a recording head including a liquid ejection surface comprising at least two nozzles for independently ejecting at least two liquids to form an image on the recording medium (column 1, lines 11-18) and an ink set comprising water (column 2, lines 2-12), a colorant and a water-soluble organic solvent (column 2, lines 31-32), wherein the ink jet ink composition comprises at least one amine compound represented by the following formula (2):



wherein the amine compound represented by the formula (2) is any one of primary to tertiary amine compounds; at least one of three substituents represented by R.sub.1', R.sub.2' and R.sub.3' in the formula (2) comprises a hydrocarbon group having a hydroxyl group; and at least one of the three substituents comprises a hydrocarbon group containing an alkyl group having at its terminal either one of --CO.sub.2M and --SO.sub.3M in which M represents an atom or an atomic group selected from hydrogen, an alkali metal, an alkaline earth metal, an ammonium group and an organic amine group (column 2, lines 20-28).

Yui et al. as modified does not teach a recording medium transfer section transferring a recording medium in one direction while the recording medium faces the

liquid ejection surface and a shortest distance between the recording medium and ejection surface is constantly maintained for printing images while moving the recording head in a direction perpendicular to the transfer direction of the recording medium and a colorless ink jet treatment liquid comprising at least water and a water soluble organic solvent.

Koitabashi teaches a recording medium transfer section transferring a recording medium (column 7, lines 1-22) in one direction while the recording medium faces the liquid ejection surface and a shortest distance between the recording medium and ejection surface is constantly maintained (column 11, lines 10-32) for printing images while moving the recording head in a direction perpendicular to the transfer direction of the recording medium.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink jet recording apparatus taught by Yui et al. with the disclosure of Koitabashi because it is an effective method of printing.

Kawamura et al. teaches a colorless ink jet treatment liquid comprising at least water and a water soluble organic solvent (column 11, line 44-column 12, line 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the ink jet recording method and colorless treatment liquid of Yui et al. with the disclosure of Kawamura et al. in order to create higher quality images that are less prone to smudging.

***Response to Arguments***

Applicant's arguments with respect to claims 8, 10-12, 14, 17, 18, 20, 21, 24, 26, 28, and 30 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takemoto et al. (US 6084619) teaches a treatment liquid that can be either colorless or contain colorant, therefore acting as an ink (column 7, lines 37-41).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E Martin

  
11/29/06  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**